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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C.

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February 28, 1995

William F. Caton, Acting Secretary
Federal Communications Commission
1919 M. Street, N.W.
Washington, D.C. 20554

ET 94-124

Re: ET Docket No: 94-124, RM-8308

Dear Mr. Caton:

Enclosed for filing in this proceeding is an original and four copies of the Reply
Comment of my client mm-Tech, Inc., Eatontown, NJ.

Please direct any questions or requests for further information pertaining to this filing to
me.

Very truly yours,

Bruce G. McNeill
Bruce G. McNeill

BGM/dd
Enclosure

cc: Charles Brand, President
mm-Tech, Inc.
246 Industrial Way West
Eatontown, NJ 07724

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FEDERAL COMMUNICATIONS COMMISSION
WASHINGTON, D.C. 20544

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February 24, 1995

Office of the Secretary
Federal Communications Commission
1919 M Street, NW
Washington, D. C. 20554

Reference: NPRM, FCC94-273 in the matter of Amendment of Part 2 and 15 of the commission's Rules to Permit Use of Radio Frequencies Above 40 Ghz for New Radio Applications; ET Docket No. 94-124, RM-8308.

Gentlemen:

While it is to be expected that many applications of the radio spectrum above 40 GHz will evolve after rules are set forth, we have noted with some alarm that several comments have been made concerning areas of this spectrum as being ideal for LMDS systems proposed for 28 GHz, and that LMDS spectrum allocation at 28 GHz should be abandoned in favor of allocation above 40 GHz. This contention is erroneous and self serving to those advancing it.

LMDS was originally proposed as a method of video distribution and a way of providing other services that would allow rapid and economical deployment of systems giving the American public an alternative to conventional and often monopolistic cable systems. In addition LMDS could be used to provide service in areas where there is no traditional cable because cable physical plant installation is prohibitively expensive. This premise is still true, with ancillary services such as two way interactivity, data transmission, etc. becoming more important as a method for users to enter the information superhighway that is currently discussed so much in the popular press.

LMDS in the 27.5 GHz to 29.5 GHz frequency range, (28 GHz Band), is a technical reality today. There are 28 GHz experimental systems operating in several countries right now, with more starting momentarily, and in the United States commercial service is being provided to customers in New York under Cellularvision of New York's commercial license. These systems have been used to prove the concept and to validate the efficacy, reliability and availability of the commercial equipment used. In addition, and most

important, the current systems are economically feasible. Financial plans can be constructed that demonstrate service can be supplied at competitive rates, with rewards to investors sufficiently high, so that capital can be readily obtained.

FSS proponents have responded to the NPRM with papers purporting to demonstrate the technical feasibility of LMDS above 40 GHz, albeit with some "minor" performance degradation. These analyses rely on assumptions that do not address the real life situation that at frequencies above 40 GHz, important pieces of suitable equipment, necessary to the implementation of an economically feasible LMDS system simply don't exist.

One important example of this is the transmitter output amplifier. Current 28 GHz band LMDS transmitters process output signals in one of two ways, channelized or multi-channel block. The channelized systems typically use solid state devices to amplify the output signal one channel at a time, combining the signals after amplification. This method is used because the current state of the art in solid state power amplifiers in the 28 GHz band is capable of providing only enough linear power for a single channel. The multi-channel systems utilize Traveling Wave Tube Amplifiers which are capable of providing sufficient power to amplify a block of signals 1- 2 GHz wide.

At 40 GHz the current state of the art for output power in solid state devices is less than half of that available at 28 GHz, for TWTAs it is approximately 40%. Undoubtedly the state of the art will progress, but the time needed for commercially available, 40 GHz solid state devices to reach required power levels is years away. Furthermore, whatever the level of the state of the art for 40 GHz, it will be better at 28 GHz. The time frame for the TWTAs development is similar to that of the solid state devices.

This time frame fits the implementation of the satellite systems much better than it does LMDS. If any systems are shifted to 40 GHz it's more logical that it be the satellite systems. In fact, since the satellites operate with lower per channel power, because of narrower bandwidths, the power levels at 40 GHz already come close to meeting their requirements

LMDS in the 28 GHz band is ready for implementation now. Proponents of FSS have known of the existence of the LMDS use of the 28 GHz band for several years, have known of Cellularvision's Pioneers Preference license and until LMDS was to be granted permanent use of the band had not indicated any intention to use it. The FSS proponents real purpose, in distorting the stated goal of this NPRM by promoting it as an avenue to move LMDS to the higher frequency band, is to slow or stop the implementation of LMDS.

If they succeed the American people will be denied a number of benefits the system can provide:


1. An affordable alternative to Cable TV.
2. Access to an interactive two way system that will connect them to the Information Superhighway.

3. Reduction of the Federal budget deficit as a result of revenue generated in spectrum auctions. This is in contrast, incidentally, to FSS which has received enormous amounts of spectrum free of charge, and apparently expect to continue that situation.
4. Jobs created by companies manufacturing equipment, providing video service, local programming and companies using the interactivity to provide communication services.

As a manufacturer of LMDS infrastructure equipment, who participated in the LMDS/FSS Negotiated Rule Making Committee, we have received numerous inquiries from foreign companies interested in deploying LMDS systems. Operational frequencies discussed have all been at or below the 28 GHz band. The main interest of many of these operators is the two way capability. The fact that the frequency reuse available with a terrestrial system is orders of magnitude higher than for a satellite system is extremely important to them. The added expense and delay of a 40 GHz system is out of the question. The prevalent feeling is that spectrum at the lower frequencies is available, or will be made available, in many instances at frequencies the FSS interests feel is their birthright. The argument that the 28 GHz band will be preserved for world wide satellite use is fallacious. There are too many compelling reasons to use that spectrum for terrestrial purposes long before the satellite services envisioned are available.

If the FCC is persuaded that LMDS in the US should be shifted to the 40 GHz band it is likely the US will either wind up with a system with inferior performance at higher cost that does not match systems deployed world wide, or more likely, be left with no LMDS at all. In that case US consumers will continue to be at the mercy of monolithic, monopolistic service providers and Congress will continue to hear complaints about US regulations being the impediment to their constituents receiving services they require.

Sincerely yours,



Charles S. Brand
President